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Date: Janaury 30, 2009 /Luke Clossman/
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re patent application of:

Appellant(s):	William Gardner	Examiner:	Vijay B. Chawan
Serial No:	10/669,475	Art Unit:	2626
Filing Date:	September 23, 2003		

Title: DATA COMMUNICATION THROUGH ACOUSTIC CHANNELS AND COMPRESSION

Mail Stop Appeal Brief-Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

APPEAL BRIEF

Dear Sir:

Appellant submits this brief in connection with an appeal of the above-identified patent application. It is believed that no payment is due because this Brief is in response to prosecution that was re-opened as a result of a prior Appeal Brief. In the event any additional fees are due, the Commissioner is authorized to charge such fees to Deposit Account No. 50-1063 [QUALP821USA].

I. Real Party in Interest (37 C.F.R. §41.37(c)(1)(i))

The real party in interest in the present appeal is Qualcomm Incorporated, the assignee of the present application.

II. Related Appeals and Interferences (37 C.F.R. §41.37(c)(1)(ii))

Appellants, appellants' legal representative, and/or the assignee of the present application are not aware of any appeals or interferences which may be related to, will directly affect, or be directly affected by or have a bearing on the Board's decision in the pending appeal.

III. Status of Claims (37 C.F.R. §41.37(c)(1)(iii))

Claims 1-35 stand rejected by the Examiner. The rejection of claims 1-35 is being appealed.

IV. Status of Amendments (37 C.F.R. §41.37(c)(1)(iv))

The Examiner has entered the amendments submitted after the Final Office Action for purposes of Appeal. (*See* Communication from Examiner dated February 20, 2008).

V. Summary of Claimed Subject Matter (37 C.F.R. §41.37(c)(1)(v))

Some of the claims are directed to a transmitter, while others are directed to a receiver. The claims directed to a transmitter include independent claims 1, 11, 21, 27, and 34. Those directed to a receiver include independent claims are 6, 16, 24, 29, 31, and 35. Independent claim 31 comprises both transmitter and receiver characteristics.

In one embodiment of the claimed subject matter (independent claim 1), Appellants claim an apparatus (100) for use in transmitting digital data through an audio channel, comprising a data coder (120) configured to convert the digital data into one or more types of sound parameters (paragraph 0025, lines 3-4) and a sound synthesizer (130) coupled to the data coder and configured to convert the one or more types of sound parameters into acoustic sound waves to acoustically transfer the digital data (paragraph 0025, lines 4-5). In other words, digital data is converted into sound parameters and then synthesized into acoustic sound waves.

In another embodiment (independent claim 6), Appellants claim an apparatus (200) for use in receiving digital data through an audio channel, the apparatus comprising a sound analyzer

(210) configured to receive acoustic sound waves and to extract one or more types of sound parameters from the received acoustic sound waves (paragraph 0025, lines 6-7) and a data decoder (230) coupled to the sound analyzer and configured to convert the extracted one or more types of sound parameters into the digital data (paragraph 0025, lines 7-8). In other words, claim 6 recites an apparatus for performing the reverse process of claim 1.

In yet another embodiment (independent claim 11), Appellants claim a method for use in transmitting digital data through an audio channel, the method comprising converting digital data into one or more types of sound parameters (paragraph 0025, lines 3-4) and converting the one or more types of sound parameters into acoustic sound waves to acoustically transfer the digital data (paragraph 0025, lines 4-5).

In still another embodiment (independent claim 16), Appellants claim a method for use in receiving digital data through an audio channel, the method comprising extracting one or more types of sound parameters from received acoustic sound waves (paragraph 0025, lines 6-7) and converting the extracted one or more types of sound parameters into the digital data (paragraph 0025, lines 7-8).

In another embodiment (independent claim 21, a means plus function claim), Appellants claim an apparatus (100) for use in transmitting digital data through an audio channel, the apparatus comprising means (120) for converting digital data to be transmitted into one or more types of sound parameters (paragraph 0025, lines 3-4) and means (130) for converting the one or more types of sound parameters into acoustic sound waves to acoustically transfer the digital data (paragraph 0025, lines 4-5).

In another embodiment (independent claim 24, a means plus function claim), Appellants claim an apparatus (100) for use in receiving digital data, the apparatus comprising means (210) for extracting one or more types of sound parameters from received acoustic sound waves (paragraph 0025, lines 6-7) and means (230) for converting the extracted one or more types of sound parameters into the digital data (paragraph 0025, lines 7-8).

In yet another embodiment (independent claim 27), Appellants claim a machine readable medium (paragraph 0069, lines 2-4) used for transmitting digital data through an audio channel, the machine readable medium comprising codes (paragraph 0069, lines 1-4) for converting digital data to be transmitted into one or more types of sound parameters (paragraph 0025, lines 3-4) and codes (paragraph 0069, lines 1-4) for converting the one or more types of sound parameters into

acoustic sound waves to acoustically transfer the digital data (paragraph 0025, lines 4-5).

In yet another embodiment (independent claim 29), Appellants claim a machine readable medium (paragraph 0036, lines 2-4) used for receiving digital data through an audio channel, the machine readable medium comprising codes (paragraph 0069, lines 1-4) for extracting one or more types of sound parameters from received compressed sound (paragraph 0025, lines 6-7) and codes (paragraph 0069, lines 1-4) for converting the extracted one or more types of sound parameters into the digital data (paragraph 0025, lines 7-8).

In a another embodiment (independent claim 31, a means plus function claim), Appellants claim an apparatus (100) for use in transmitting and receiving digital data through an audio channel, the apparatus comprising means (120) for converting digital data to be transmitted into one or more types of sound parameters (paragraph 0025, lines 3-4), means (130) for generating acoustic sound waves based on the one or more types of sound parameters (paragraph 0025, lines 4-5), means (210) for extracting one or more types of sound parameters from received acoustic sound waves (paragraph 0025, lines 6-7), and means (230) for converting the extracted one or more types of sound parameters into the digital data (paragraph 0025, lines 7-8).

In still another embodiment (independent claim 34), Appellants claim a processor (paragraph 0069, line 4) for use in transmitting digital data through an audio channel, the processor comprising a processing circuit (paragraph 0027, lines 6-7) configured to convert digital data to be transmitted into one or more types of sound parameters (paragraph 0025, lines 3-4) and converting the one or more types of sound parameters into acoustic sound waves to acoustically transfer the digital data (paragraph 0025, lines 7-8).

In a final embodiment (independent claim 35), Appellants claim a processor (paragraph 0069, line 4) for use in receiving digital data through an audio channel, the processor comprising a processing circuit (paragraph 0027, lines 6-7) configured to extract one or more types of sound parameters from received acoustic sound waves (paragraph 0025, lines 6-7) and convert the extracted one or more types of sound parameters into the digital data (paragraph 0025, lines 7-8).

VI. Grounds of Rejection to be Reviewed (37 C.F.R. §41.37(c)(1)(vi))

A. Whether claims 26-30 are directed towards non-statutory subject matter under 35 U.S.C. §101. Claims 26-30 stand rejected under 35 U.S.C. §101.

B. Whether claims 1-35 are unpatentable over Harada (US 6,038,529) in view of White (US 6,408,272). Claims 1-35 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Harada in view of White.

VII. Argument (37 C.F.R. §41.37(c)(1)(vii))

A. <u>Rejection of Claims 26-30 Under 35 U.S.C. §101</u>

Claims 26-30 were rejected under 35 U.S.C. §101 as allegedly being directed to non-statutory subject matter (Appellants believe that claims 27-30 are at issue, rather than claims 26-30). Specifically, it was alleged that these claims are drawn to a computer program without any structural and functional interrelationship between the computer program and other claimed elements of a computer which permit the computer program's functionality to be realized (Waterdam, 33 F.3d at 1361, 31 USPQ2d at 1760; Lowry, 32 F.3d at 1583-84, 32 USPQ2d at 1035).

Appellants do not believe that these claims are drawn to a computer program. These are apparatus claims, drawn to a "computer readable medium". The medium comprises computer readable instructions that, when executed, perform a certain function. Appellants consider this type of claim format to be in the form of a Beauregard claim, which has been long accepted as a proper claim format under 35 U.S.C. §101 (*see In re Beauregard, In re Beauregard, Appeal No. 95-1054 (Fed. Cir., filed November 15, 1994)*). Accordingly, Appellants respectfully request that the rejection be withdrawn.

B. <u>Rejection of Claims 1-35 Under 35 U.S.C. §103(a)</u>

Claims 1-35 stand rejected under 35 U.S.C. §102(e) as being unpatentable over Harada (US 6,038,529) in view of White (US 6,408,529). It was alleged that Harada teaches a transmitter comprising "a data coder configured to convert the digital data into one or more types of sound parameters" and that White teaches "a sound synthesizer coupled to the data coder and configured to convert the one or more types of sound parameters into acoustic sound waves to

acoustically transfer the digital data ". It was further alleged that it would have been obvious for one skilled in the art to modify Harada with the teachings of White to obviate Appellants' claimed subject matter. Appellants traverse these findings as follows.

a. White fails to teach a transmitter comprising a *"a sound synthesizer coupled to the data coder and configured to convert the one or more types of sound parameters into acoustic sound waves to acoustically transfer the digital data*"– Claims 1, 11, 21, 27, 31, and 34

It was alleged that White teaches a sound synthesizer coupled to the data coder and configured to convert the one or more types of sound parameters into acoustic sound waves to acoustically transfer the digital data in Figure 2, items 28, 34, and 42. This feature, or equivalents thereof, is found in Appellants' independent claims 1, 11, 21, 27, 31, and 34.

White teaches a voice interface system for allowing a user to interact with an electronic device through verbal commands and responses. Processing component 28 is described as a general purpose processor controlling various functions of the voice interface system. Parameter extraction component 34 transforms speech from a user into a series of "feature parameters" such as standard cepstral coefficients, Fourier coefficients, linear predictive coding (LPC) coefficients, etc. Speech generation engine 42 outputs speech to the user, comprising pre-recorded messages, prompts, etc.

None of the above-mentioned components of White are equivalent to Appellants' sound synthesizer for converting sound parameters into acoustic sound waves. The speech generation engine 42 described in White either plays back recordings stored in a memory or received from an external source or it uses a text-to-speech process to convert, for example, email messages into audible speech. There is no mention whatsoever that the speech generation engine 42 uses sound parameters to generate audio signals for the user. On this basis alone, the rejection under 35 U.S.C. §103(a) should be reversed.

Appellants further believe that White fails to teach a sound synthesizer that converts sound parameters into acoustic sound waves to *acoustically transfer the digital data.* As mentioned above, White teaches a speech generation engine 42 that either plays back recordings stored in a memory or received from an external source or it uses a text-to-speech process to convert, for example, email messages into audible speech. The output of speech generation

engine 42 comprises human speech. Appellants' claimed subject matter recites a sound synthesizer that generates acoustic sound waves that acoustically transfers digital data. The human speech produced by White's speech generation engine 42 cannot be considered an acoustic sound wave that conveys digital information.

Finally, Appellants argue that the modifying the teachings of Harada with the teaching of White would render Harada unsatisfactory for its intended use. If the proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification (*In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984)).

Assume, *arguendo*, that Harada teaches a transmitter comprising a data coder configured to convert digital data into sound parameters and that White teaches a sound synthesizer coupled to the data coder configured to convert the sound parameters into acoustic sound waves to acoustically transfer the digital data. Speech input to the Harada system would be converted into sound parameters and then those sound parameters would be provided to the White sound synthesizer. The sound parameters would be converted back into speech and provided back to the user. So, the Harada system would simply provide the same audio information back to the user if it were combined with the teachings of White. This modification would render the Harada transmitter unsatisfactory for its intended purpose of converting audio information into digitally encoded data and transmitting that information.

Based on the above arguments, the rejection to claims 1, 11, 21, 27, 31, and 34 (as well as all claims dependent therefrom) should be reversed because White fails to teach a sound synthesizer coupled to the data coder and configured to convert the one or more types of sound parameters into acoustic sound waves to acoustically transfer the digital data. Accordingly, Appellants respectfully request that the rejection to these claims be reversed.

b. Harada fails to teach a receiver comprising *"a sound analyzer configured to receive acoustic sound waves and to extract one or more types of sound parameters from the received acoustic sound waves"*- Claims 6, 16, 24, 29, 31, and 35

Claims 6, 16, 24, 29, 31, and 35 were rejected because it was alleged that Harada teaches a "sound analyzer configured to receive acoustic sound waves and to extract one or more types of sound parameters from the received acoustic sound waves" as recited in Appellants' claimed

subject matter. This feature, or equivalent, is also recited in claims 16, 24, 29, 31, and 35. It was alleged that Harada teaches this claim feature in Figures 3 and 4 and in column 4, line 51 through column 5, line 52.

Harada teaches an audio-compression scheme used in a digital telephone system. In short, audio information is provided to a transmitter that digitally encodes the audio information. The transmitter then discriminates between a "sound present" period and a "silence period" in the encoded data. Only data determined to be in the "sound present" period is transmitted.

Harada also teaches a receiver that wirelessly receives the digitally encoded data from the transmitter. The receiver decodes the encoded data upon detecting a "sound present" period and inserts artificial noise during "silent periods". The decoded data and artificial noise is then converted into an audio signal for a user to hear.

In the Harada receiver, signal reception unit 33 receives digitally encoded data, i.e., data encoded using the ITU-T Recommendations G.728 standard, from "inputting element" 21 and then provides the data to data converter 37. Data converter 37 comprises elements to select between encoded data received through inputting element 21 or encoded data generated by data generator 24. The chosen signal is then provided to data decoder 39, where sound selector 42 selects either an audio signal of artificial noise generated by noise generator 41 or an audio signal outputted from decoder 26, depending on whether a non-reception/reception flag is set or not. (*See Harada, column 10, line 56 – column 11, line 23*)

Appellants do not believe that Harada teaches a receiver comprising a "sound analyzer configured to receive acoustic sound waves and to extract one or more types of sound parameters from the received acoustic sound waves". The receiver described by Harada does not receive acoustic sound waves. It is a typical RF receiver in that it receives RF signals, converts the RF signals into digital data, and then into sound waves. As such, Harada does not teach or suggest a sound analyzer that *receives* acoustic sound waves and extracts sound parameters from the received acoustic sound waves.

Regarding the transmitter described by Harada, it is a typical RF transmitter in that it processes audio signals for RF transmission. Audio signals, such as human speech, is provided by an "audio inputting element" 11. The audio signals are then digitized and encoded by using, for example, the ITU-T Recommendations G.728 standard. The encoding process is described in Harada in column 2, lines 5-14. It explains that "an encoding processing unit 104 encodes the

audio signal in a sound-present period in accordance with the CELP system and outputs a speech parameter." This is in contrast to Appellants' claimed subject matter, which *extracts* sound parameters from an acoustic sound wave. The term "extracts" implies that sound parameters are already present within the acoustic sound wave. In other words, Harada takes acoustic signals and calculates speech parameters (in accordance with widely-known vocder principles), while Appellants claim extraction of already-existing parameters in an acoustic sound wave.

Based on the foregoing, Appellants respectfully request that the rejection to claims 6, 16, 24, 29, 31, and 35 (as well as all claims dependent therefrom) be reversed because all of these claims recite the feature of sound analyzer configured to receive acoustic sound waves and to extract one or more types of sound parameters from the received acoustic sound waves. Accordingly, Appellants respectfully request that the rejection to these claims be reversed.

D. Conclusion

For at least the above reasons, the claims currently under consideration are believed to be patentable over the cited references. Accordingly, it is respectfully requested that the rejections of claims 1-35 be reversed.

If any additional fees are due in connection with this document, the Commissioner is authorized to charge those fees to Deposit Account No. 50-1063 [QUALP821USA].

Respectfully submitted,
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VIII. Claims Appendix (37 C.F.R. §41.37(c)(1)(viii))

1. An apparatus for use in transmitting digital data through an audio channel, the apparatus comprising:

a data coder configured to convert the digital data into one or more types of sound parameters; and

a sound synthesizer coupled to the data coder and configured to convert the one or more types of sound parameters into acoustic sound waves to acoustically transfer the digital data.

2. The apparatus of claim 1, further comprising:

a storage medium configured to store one or more sets of relationships between bit patterns and the one or more types of sound parameters; and

wherein the data coder is configured to convert the digital data into the one or more types of sound parameters in accordance with the one or more sets of relationships between the bit patterns and the one or more types of sound parameters.

3. The apparatus of claim 2, wherein the storage medium comprises a look up table that predefines the one or more sets of relationships between the bit patterns and the one or more types of sound parameters.

4. The apparatus of claim 1, wherein a sound parameter represents one value or a range of values representative of user authentication information.

5. The apparatus of claim 1, wherein the one or more types of sound parameters comprises a at least one speech parameter representative of artificial speech.

6. An apparatus for use in receiving digital data through an audio channel, the apparatus comprising:

a sound analyzer configured to receive acoustic sound waves and to extract one or more types of sound parameters from the received acoustic sound waves; and

a data decoder coupled to the sound analyzer and configured to convert the extracted one or more types of sound parameters into the digital data.

7. The apparatus of claim 6, further comprising:

a storage medium configured to store one or more sets of relationships between bit patterns and the one or more types of sound parameters; and

wherein the data decoder is configured to convert the extracted one or more types of sound parameters into the digital data in accordance with the one or more sets of relationships between the bit patterns and the one or more types of sound parameters.

8. The apparatus of claim 7, wherein the storage medium comprises a look up table that predefines the one or more sets of relationships between the bit patterns and the one or more types of sound parameters.

9. The apparatus of claim 6, wherein a sound parameter represents one value or a range of values representative of user authentication information.

10. The apparatus of claim 6, wherein the extracted one or more types of sound parameters comprise a at least one speech parameter representative of artificial speech.

11. A method for use in transmitting digital data through an audio channel, the method comprising:

converting digital data to be transmitted into one or more types of sound parameters; and

converting the one or more types of sound parameters into acoustic sound waves to acoustically transfer the digital data.

12. The method of claim 11, further comprising:

storing one or more sets of relationships between bit patterns and the one or more types of sound parameters; and

wherein converting the digital data to be transmitted comprises converting the digital data into the one or more types of sound parameters in accordance with the one or more sets of

relationships between the bit patterns and the one or more types of sound parameters.

13. The method of claim 12, wherein storing the one or more sets of relationships comprises storing a look up table that predefines the one or more sets of relationships between the bit patterns and the one or more types of sound parameters.

14. The method of claim 11, wherein a sound parameter represents one value or a range of values representative of user authentication information.

15. The method of claim 11, wherein the one or more types of sound parameters comprises a at least one speech parameter representative of artificial speech.

16. A method for use in receiving digital data through an audio channel, the method comprising:

extracting one or more types of sound parameters from received acoustic sound waves; and

converting the extracted one or more types of sound parameters into the digital data.

17. The method of claim 16, further comprising:

storing one or more sets of relationships between bit patterns and the one or more types of sound parameters; and

wherein converting the extracted one or more types of sound parameters comprises converting the extracted one or more types of sound parameters into the digital data in accordance with the one or more sets of relationships between the bit patterns and the one or more types of sound parameters.

18. The method of claim 17, wherein storing the one or more sets of relationships comprises storing a look up table that predefines the one or more sets of relationships.

19. The method of claim 16, wherein a sound parameter represents one value or a range of values representative of user authentication information.

20. The method of claim 16, wherein the extracted one or more types of sound parameters comprise at least one speech parameter representative of artificial speech.

21. An apparatus for use in transmitting digital data through an audio channel, the apparatus comprising:

means for converting digital data to be transmitted into one or more types of sound parameters; and

means for converting the one or more types of sound parameters into acoustic sound waves to acoustically transfer the digital data.

22. The apparatus of claim 21, further comprising:

means for storing one or more sets of relationships between bit patterns and the one or more types of sound parameters; and

wherein the means for converting converts the digital data into the one or more types of sound parameters in accordance with the one or more sets of relationships between the bit patterns and the one or more types of sound parameters.

23. The apparatus of claim 22, wherein the means for storing stores a look up table that predefines the one or more sets of relationships between the bit patterns and the one or more types of sound parameters.

24. An apparatus for use in receiving digital data through an, the apparatus comprising:

means for extracting one or more types of sound parameters from received acoustic sound waves; and

means for converting the extracted one or more types of sound parameters into the digital data.

25. The apparatus of claim 24, further comprising:

means for storing one or more sets of relationships between bit patterns and the one or more types of sound parameters; and

wherein the means for converting converts the extracted one or more types of sound parameters into the digital data in accordance with the one or more sets of relationships between the bit patterns and the one or more types of sound parameters.

26. The apparatus of claim 25, wherein the means for storing stores a look up table that predefines the one or more sets of relationships between the bit patterns and the one or more types of sound parameters.

27. A machine readable medium used for transmitting digital data through an audio, the machine readable medium comprising:

codes for converting digital data to be transmitted into one or more types of sound parameters; and

codes for converting the one or more types of sound parameters into acoustic sound waves to acoustically transfer the digital data..

28. The medium of claim 27, further comprising:

one or more sets of relationships between bit patterns and the one or more types of sound parameters; and

wherein the codes for converting converts the digital data into the one or more types of sound parameters in accordance with the one or more sets of relationships between the bit patterns and the one or more types of sound parameters.

29. A machine readable medium used for receiving digital data through an audio channel, the machine readable medium comprising:

codes for extracting one or more types of sound parameters from received compressed sound; and

codes for converting the extracted one or more types of sound parameters into the digital data.

30. The medium of claim 29, further comprising:

one or more sets of relationships between bit patterns and the one or more types of sound

parameters; and

wherein the codes for converting converts the extracted one or more types of sound parameters into the digital data in accordance with the one or more sets of relationships between the bit patterns and the one or more types of sound parameters.

31. An apparatus for use in transmitting and receiving digital data through an audio channel, the apparatus comprising:

means for converting digital data to be transmitted into one or more types of sound parameters;

means for generating acoustic sound waves based on the one or more types of sound parameters;

means for extracting one or more types of sound parameters from received acoustic sound waves; and

means for converting the extracted one or more types of sound parameters into the digital data.

32. The apparatus of claim 31, further comprising:

means for storing one or more sets of relationships between bit patterns and the one or more types of sound parameters; and

wherein the means for converting converts the digital data into the one or more types of sound parameters in accordance with the one or more sets of relationships between the bit patterns and the one or more types of sound parameters, and wherein the means for converting converts the extracted one or more types of sound parameters into the digital data in accordance with the one or more sets of relationships between the bit patterns and the one or more types of sound parameters.

33. The apparatus of claim 32, wherein the means for storing stores a look up table that predefines the one or more sets of relationships between the bit patterns and the one or more types of sound parameters.

34. A processor for use in transmitting digital data through an audio channel, the processor comprising:

a processing circuit configured to:

convert digital data to be transmitted into one or more types of sound parameters; and

converting the one or more types of sound parameters into acoustic sound waves to acoustically transfer the digital data.

35. A processor for use in receiving digital data through an audio channel, the processor comprising:

a processing circuit configured to:

extract one or more types of sound parameters from received acoustic sound waves; and

convert the extracted one or more types of sound parameters into the digital data.

IX. Evidence Appendix (37 C.F.R. §41.37(c)(1)(ix))

None.

X. Related Proceedings Appendix (37 C.F.R. §41.37(c)(1)(x))

None.